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ABSTRACT

English is a stress-timed language whose syllables have a much wider variety of onsets, codas, and combinations than many languages. English also has the widest range of syllable length and quality between stressed and unstressed syllables and a distinctive pattern of intervals between stressed syllables. These characteristics make it difficult for speakers of a syllable-timed language such as Japanese to assimilate English speech rhythm. Certain phonological devices establish and maintain English rhythmic regularity and the rhythmic expectation among English speakers. Use of visual aids in which English stress is presented like musical notes illustrates graphically to Japanese speakers how English and Japanese rhythms differ, and is particularly appealing to this group because of the high quality of music education in Japan. Having students whisper English words in chorus also assists in teaching syllabification and pronunciation, and demonstrates that loudness is irrelevant to stress. Establishing this kind of sensitivity to timing and rhythm in non-native speakers is important in increasing the intelligibility to Japanese students of English as spoken by native speakers. (MSE)

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English Speech Rhythm and Its Teaching to Non-native Speakers

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Abstract

Since Pike (1945) first proposed the distinction between stress-timed and syllable-timed languages, more attention has been paid to the rhythmic structure of English. The rhythm of spoken English is determined by the contrast between strong and weak syllables, while other languages like French or Japanese have different rules for the succession of similar syllable durations.

As the speech rhythm is language specific, our perception of foreign speech is strongly influenced by our native language system. How does the difference of speech timing affect the acquisition of the foreign accent and prosody when native speakers of a syllable-timed language learn English? Stress and speech timing have a significant effect on intelligibility. Practice of individual phonetic differences does not necessarily improve communicative efficiency. Rather, in spite of their incorrect pronunciation students can communicate more sufficiently if they have acquired the appropriate rhythm of the language.

I will discuss the problems of speech rhythms which arise when teaching English to students, whose native tongue is not stress-timed, and offer practical solutions on the basis of phonological factors. I shall also offer my experience of teaching in Japan. Then, I will propose several points toward more efficient teaching of the implicit rhythmic constraints of the English language.

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Since Pike (1945:35) first proposed the distinction between stress-timed and syllable-timed languages, more attention has been paid to the differences in speech rhythms among languages. When native speakers of a so-called syllable-timed language learn English, which is generally considered as the representative of stress-timed languages, how does the difference of speech timing affect the acquisition of the foreign speech rhythm? We will first look at the main phonological characteristics of the English speech rhythm.

1. Syllabification and Isochronicity of English

The listener anticipates the temporal structure of the language not only by the stress pattern but also by the syllable structure. English syllables have a much wider variety of onsets and codas and combinations of them than many languages. Let us start our observation from the syllable which is the smallest unit to carry linguistic information, and then explore the duration of speech segments at the phrasal level.

The segmentation of a syllable is deeply rooted in each language in a specific manner. Native speakers intuitively know how to segment one syllable from another, though to master this ability in a foreign language is rather hard. English syllabification is very complex: Its syllables basically contain a vowel or a diphthong in combination with a varying number of consonants before and after the vowel, which can be schematized as $C_0^3VC_0^4$, for instance:

V	I, a
CV	he, to

CVC	house, rain, seek
VC	at, is
CCVC	stop, school, drive
CCV	stew, play
CVCC	pant, six
CCVCC	steps, print
VCC	ask, end
VCCC	asked, ants
CVCCC	pants, sounds
CCCV	screw, spree
CCCVC	scream, strike
CCCVCC	stripes
CCVCCCC	glimpsed
CCCVCCCC	strengths

Delattre (1966) compared English, German, Spanish and French in regard to the distribution of their syllable weight. By investigating the syllable lengths and the factors which correlate and condition them he arrived at a scheme which shows that English has the widest range of syllable lengths between stressed and unstressed syllables. It is this difference in length and quality between stressed and unstressed syllables that creates the impression of a certain bumpiness of the English language, which is less perceivable in German and least in Spanish, while French evades the comparison altogether by not offering any distinctions in syllable duration.

The variability of syllable duration in English makes it difficult for speakers of a syllable-timed language to assimilate its speech rhythm (Adams 1979:89). It usually takes a long time for learners to recognize the

differences in segmentation and timing of the target language. They will not be able to capture the English rhythm, unless they abandon their inclination to pronounce unstressed syllables as equal segments as if they were stressed. As a result, the learners cannot make themselves understood in the language and, thus, cannot have a sense of achievement. Speech rhythm is essential for intelligibility. Even if one fails to produce the correct sounds, an utterance will remain pretty intelligible as long as the speech rhythm is kept up properly.[1]

Another characteristic feature of the English speech rhythm has been discussed by the term isochrony which describes the tendency of stresses occurring at regular intervals of time in spite of a varying number of unstressed syllables between them. Phoneticians and prosodists have been trying to capture the nature of the English speech rhythm by means of scientific measurements, (Schramm 1934, Boomsliter, Creel and Hastings 1973, Huggins 1978, Jassem, Hill and Witten 1984), or by setting up rules for the hierarchy of English stress patterns (Liberman and Prince 1977, Schane 1979, Giegerich 1980, Bolinger 1981). The following examples are paradigmatical in showing the isochronicity of English.

Énglish is éasy.

Énglish is very éasy.

An Énglish lesson is éasy.

An Énglish lesson is very éasy.

The téacher cáme.

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1 Some teachers spend considerable time on the practice of the phonemic sounds such as [l] vs. [r]. However, the practice in isolation does not always help students to use these sounds correctly in the actual reading and conversations. Rather, if the student uses the correct rhythm, the failure in pronouncing [l] or [r] does not always affect intelligibility

The téacher is the one who cáme.

Several attempts at a physical measurement of intervals between stresses have been made (Allen 1975, Martin 1972, Dauer 1983). Contrary to the postulated isochrony of English, these measurements have visually demonstrated that the actual intervals show different lengths in time. How, we have to ask, can we explain this gap between the physical measurements and speakers' perception?

Lehiste (1977) mentions that isochrony is primarily a perceptual phenomenon. The tendency to impose the rhythm of isochrony onto the syntagmatic flow of speech sounds makes the utterance appear to be divided by equal durations of time.

Isochrony can be redefined here as the imposed expectancy of speech timing during the course of performance. Human senses are often inaccurate in judging phenomena objectively. With our hearing sense we attempt to impose rhythmic regularity on the linear sequence of speech sounds, and for the sake of this rhythmic regularity English speakers go as far as altering the basis of syllable quality and segment duration.

2. Stress-timed vs. Syllable-timed

The perceived speech rhythm differs from language to language. The tapping of a foot or a hand lends itself perfectly to intuition in accompanying English verse. However, that tapping does not work for Romance or Japanese verses. With these languages the unity is mathematical and the syllable duration tends to be approximately the same. One more syllable or less means a complete change in the rhythmic structure and balance of the line. We need to ask whether terms like stress-timing and syllable-timing are adequate means to describe these differences among languages.

Roach (1982), who investigated the nature of the Spanish speech rhythm, proceeded by measuring the syllable duration and the number of syllables per inter-stress intervals for six languages --French, Telegu, Yoruba, English, Russian and Arabic -- from which he concluded that the physical entities do not support the idea of two separate measurement categories for time intervals within a speech. Pointon (1980), too, rejects such a distinction after investigating the speech rhythm in spoken Spanish.

Though the scientific figures fail to support the idea of an existing difference between stress-timed and syllable-timed speech rhythms, languages like Spanish, Telegu and Japanese sound so different to an English native speaker that one cannot hope to define these differences other than in terms of syllable differences. Roach (1982:78) prefers the term "rhythmicality," when referring to different types of timing, to "stress/syllable timed rhythm." Whatever terminology we employ, there still remain things to be argued about differences between different types of rhythms, though it is apparent from the above observations that the terms isochrony and stress/syllable timing are not satisfactory enough for describing them. In the next section we will see what kind of phonological devices are used in order to establish the English speech rhythm.

3. Phonological Devices to maintain the English Speech Rhythm

We have seen that the rhythmic organization and syllabification, which are incorporated into the phonology of the language in a specific manner, are decisive and crucial for the maintenance of rhythmic regularity. We can also assert that the following phonological factors have important functions in establishing the imposed rhythmic expectancy among English speakers.

1. The numerous vowels and complex syllable structures with various numbers of consonant clusters on each side of the syllable peak.

2. The variable numbers of unstressed syllables between stresses.[2]

3. The vowel reduction rule which changes phonemic vowels into [ɨ], [ə], and [ɐ].[3]

4. The vowel deletion rule in rapid unstressed environment.

5. The enormous variability of phonemes in both consonants and vowels.[4]

6. The occurrence of syllabic consonants such as [r̩], [l̩], [n̩], or [m̩] as the nucleus in rapid speech.

7. The longer duration of stressed syllables as against unstressed syllables.[5]

8. The function of silent unstresses is to keep up the regularity of rhythm. In other words, successive stresses without being interfered by unstresses. For example, in the sentence Cóme hére ríght nów, null syllables can be said to exist between stresses in order to maintain the basic rhythm.

9. The change of duration according to the phonetic environment.[6]

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2 Gueron (1974:89) points out that the metrical rules for nursery rhymes are so flexible that the number of interstress unstresses may range from four to nineteen.

3 See Bolinger (1981:2-11) for the significant role of the English reduced vowels as well as for the articulatory distinction between full vowels and reduced ones.

4 For instance, /t/ is realized in a variety of [t], [tʰ], [tˀ], [ɾ], and so on according to its position within a word, and furthermore, /t/ shows up as the glottal stop in the words such as mountain, bottle, Latin, etc.

5 According to Schramm's experiment (1934), accented syllables are on the average about twice as long as unaccented syllables. Japanese ears are correct in perceiving asks as five syllables, for the stressed vowel is perceived as two syllables (two morae, more accurately), and each consonant as one single syllable. See Section 4.

6 The figures by Huggins (1978) show that English syllables may change their duration depending on the number of syllables within a word. His Figure 5 demonstrates that the syllable [ɔr] is progressively shortened when followed by a higher number of unstressed syllables, i.e., among the words board, border, bordering, and borderingly the syllable [ɔr] takes the longest duration in board and the shortest duration in borderingly. On the phrasal level the same shortening effect is observed

10. The rules for the linkage and juncture of syllables within and across word boundaries which account for the following examples.

hideous [hidjəs]	going to [gounə]
did you [dɪdju]	Stick them up! [stɪkm̩əp]

4. Teaching English to the Students of "Syllable-timed" Languages

On Dauer's scheme of stress-basedness (1983:60) English has the strongest characteristics of stress-based, while Japanese is placed at the opposite end from English. How can we teach English speech rhythm efficiently to the Japanese students whose native tongue is the least stress-based? In other words, how can English, one of the bumpiest languages, be taught in a classroom to the speakers of one of the smoothest in speech rhythm?

Infants appear to learn intonation and stress contour before trey learn segmental features. Once acquired, speech rhythm is persistent throughout life. This is why the first generation of immigrants often maintain the rhythm of the mother tongue in the second language. Furthermore, while this very native aspect of speech is the first thing to be acquired, it is the last thing to be obtained in a foreign language. Thus, when learning a foreign language, our perception of rhythm is influenced by our native habits, however hard we try to eliminate them.

Though several textbooks on English teaching mention the isochrony and stress-timed character of English, they do not suggest practical methods. Since isochrony is not a physical entity, a metronome, which some texts

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in his Figure 6: Joe in Joe called receives a longer duration than Joe in Joe took father's shoe bench out. The more words a sentence consists of, the shorter the duration each word may occupy.

suggest, does not help, but only reveals the inconsistency of interstress intervals, which eventually embarrasses the teacher and confuses the students. Here, I will demonstrate from my teaching experience how I instruct the English speech rhythm step by step.

Since Japanese has no phonemically lax vowels, native speakers of Japanese tend to produce every English vowel in a tense manifestation. The first task of teaching English rhythm starts with the demonstration of vowel quality. Although the schwa sound which is peculiar to the English language is easy to teach in a separate practice, it turns out to be hard to show how to reduce phonemic vowels into schwas in unstressed positions. Students accept the humorous explanation of the vowel reduction rule of English as the "American easy-going way." Within a particular phrase only one or two syllables (usually stressed ones) get the full quality, and other vowels become crowded together. This variability of syllable duration makes non-native learners feel English speakers "swallow their words," "talk very fast," and "roll their tongues so often that their words cannot be perceived by foreigners."[7]

It is common for a Japanese to pronounce a diphthong in two syllables rather than one syllable. Thus, the diphthong /aɪ/ is produced in a tense way, resulting in two separate syllables [ai]. I use the musical note similar to a percussion score to visualize the contrast between the English syllable and the Japanese mora. In order to emphasize the rhythmic beats the mark x with a stem is effective than the ordinary musical note which students are apt to divide further according to the Japanese segmentation rule.

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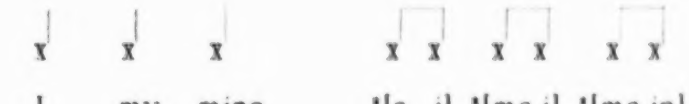
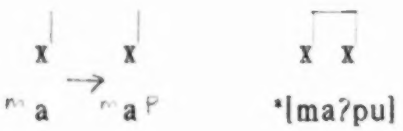
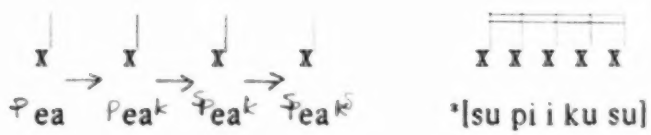
7 These are the opinions my Japanese students used to tell me, complaining about the difficulty in learning spoken English. For Japanese ears British English is easier to perceive than American English, because, the students say, "the British do not roll their tongues like Americans."

The practice of diphthongs in a row such as I-my-mine in equal time duration helps students to recognize that English diphthongs are not the same as the double vowels in the Japanese sense.



Because of the syllable structure of Japanese, students tend to pronounce the coda consonant with a vowel, changing a closed syllable into an open one, e.g., map /mæp/ is pronounced like [ma?pu]. I apply the following order to make students understand the English syllable structure of onset-peak-coda.





These ordered pictographic figures are effective in making students aware of the nature of English clusters.

Words such as street, strike or truth are among the most difficult words to pronounce for Japanese students. After they have learned how to

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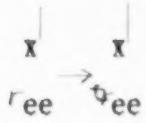
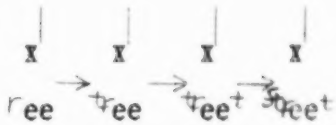
5 Asterisks are used for the wrong pronunciation or rhythm.

pronounce the syllable of (C)CVC(C), they are ready to learn the syllable CCCVC(C).





Typical for Japanese, the word strike would be pronounced as [sutoraiku] in five syllables. Not only the verbal explanation but also the idea that the word strike consists of one syllable is not conceivable for students. However, using the illustration of jammed clusters accompanied by a musical note, it becomes easier for students to visualize the syllable structures and consequently to pronounce these one-syllable words without inserting vowels between consonants.

At the phrasal level students have to confront another new category, i.e., the prosodic features of English sentences. As Japanese has a pitch accent, students tend to flatten the sentence according to their native pitch, ignoring the beat rhythm of English. In order to prevent the production of tense unstressed syllables in a row, musical beats proved to be useful again. Owing to the high quality of music education, Japanese students are delighted to encounter the music notes in their English class.

x	x	x
Í	pláy	ténnis.
Súsan	pláys	kíckball.

The gírls are pláying the piáno.

Mr. Thómpson can be pláying with his compúter.[9]

It is often said that rhymes and songs are helpful for students to improve their pronunciation and prosody. However, English teachers in Japan are aware of the difficulties that arise when teaching English verses and songs to the students. Without careful introduction the simplest nursery rhyme or children's song can become a tongue-twister without any conceivable significance at all, since rhymes and songs are usually difficult in syntax and semantics.

When speakers meet with physical restrictions in producing speech sounds as in whispering (Martin 1972), or as in "unlead choral reading" (Boomsliter, Creel and Hastings 1973), they are forced to use the most basic patterns and they expect the others to do likewise. In English this is done by equal timing between stresses, exaggeration of stresses, and close obedience to the basic speech rhythm. Dramatic variations or emphasis are not permissible in this endeavor. Therefore, when practicing English rhythm at the phrasal level, it is my empirical conclusion that setting up these constraints in class is more effective than the use of rhymes and songs. The

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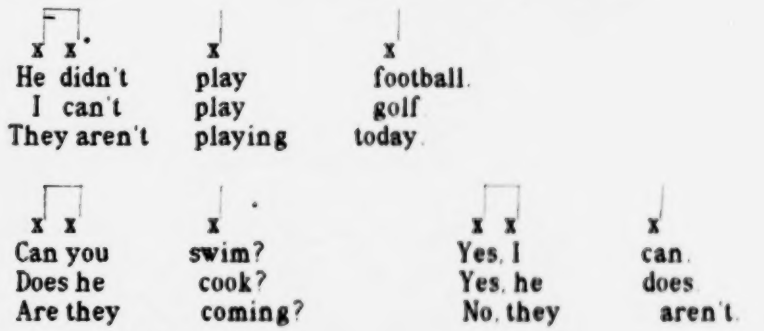
9 The following figures demonstrate my teaching of the rhythmic patterns of negative and interrogative sentences with emphasis on speech timing.



following groups of words are produced and perceived as one syllable in English.

oh, go, goat, ghost, ghosts

eye, rye, try, strike, strikes

E, Re., tree, street, streets

a, ray, tray, stray, straight

Accompanied by the teacher, students "whisper" these one-syllable words again and again "in chorus". Whispering is particularly effective in making the students recognize the differences of syllabification. It also helps students to notice that loudness is irrelevant to English stress because some students try to say stressed syllables louder without proper time duration and intensity, which sounds awkward to the ears of English native speakers.

After the correct pronunciation and syllabification are mastered in association with whispering, the students may utter words and sentences, vibrating vocal cords. Yet, they have to stick their forefingers into their ears, so that they may hear the excessive vowel which is not in the target language as soon as they insert one. Only after these skills are acquired may they speak without any physical restrictions. If the teacher tape-records their pronunciation before and after these practices, the students will be amazed when they listen to their former pronunciation.

5. Intelligibility and Language Teaching

The Japanese are aware that their hearing ability in English is rather poor and that their spoken English is not intelligible enough. But, they have no problems in understanding the spoken English of the other Japanese. Smith and Rafiqzad (1979) investigated the intelligibility of the different kinds of English spoken by non-native speakers in Asian countries. Against

their expectation the U.S. native speaker was always at the bottom of intelligibility for Asian listeners. They also found that for Japanese listeners English spoken by the other Japanese is most intelligible (94%), while American English is second least intelligible (60%). Speech should flow. If we teach English, that English should be intelligible in the native sense.

Though it is hard to overcome the influence of native rules, the first task in teaching a foreign language should be to tell the students that they have to learn to listen differently and to help them to do so. As Allen (1975:82) points out, "Since these constraints are no longer language universal, they must be learned; therefore, although articulatory timing may appear on the surface to fall within the domain of phonetic performance, the aspects of interest here must be considered part of the speaker-hearer's competence."

Rhythmic features have not been the main focus of the English education in Japan. Furthermore, it is difficult to teach the prosodic system, for it involves areas of actual performance. While the grammar may be taught without using the articulatory organs, speech cannot be taught without the complicated process of making students use their tongues, lips and vocal cords in a different way. During the past decades more money has been spent for school equipment in Japan. Yet, it still depends on the teacher's personal interest and ability to use the language laboratory or AV aids for effective teaching, especially in the area of the spoken language. The task of language teaching cannot be done by technological equipment only, however. But, once the teacher has recognized the importance of establishing the sensitivity of the students, practice of pronunciation and speech rhythm can be given in every class not just in the language laboratory. Therefore, the essential task of a language teacher is to raise this

consciousness of the foreign system in speech timing and rhythm as well as those in the native language of the students.

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BIOGRAPHICAL STATEMENT

Yasuyo Moriya is a doctoral candidate at the University of Cincinnati, studying the English language and literature. She taught English in Japan particularly in the language laboratory, and also taught linguistics at the University of Cincinnati.